

10 ○ a temperature sensitive color indicator material in thermal contact with
11 the conductive layer, characterized in that:

12 the conductive layer has

13 i) sufficient heat generating capacity to effect a change in the temperature
14 sensitive color indicator material and

15 ii) means to transfer sufficient heat generated by the conductive layer to the
16 temperature sensitive color indicator material to change the color
17 thereof and indicate voltage when the voltage indicator is in contact
18 with a battery housing; and

19 a battery switch comprising a resilient, nonconductive, deformable layer on a side
20 of said battery, a switch chamber disposed beneath said resilient layer, and a
21 conductor extending from said switch chamber and connected to the other end
22 of the indicator, a portion of the conductor within said switch chamber
23 comprising a switch contact, said battery switch being biased in an electrically
24 open position,

25 whereby upon pressing of the resilient layer over said switch chamber, the switch
26 contact will be placed in electrical contact with the second battery terminal, thereby
27 placing the indicator in electrical contact across the terminals of the battery to indicate
28 to the user the strength of the battery.

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1 64. A battery having a battery strength indicator comprising:

2 a nonrechargeable dry cell battery having a first terminal and a second terminal;

3 a battery strength indicator formed in a layer attached to a side of said battery
4 comprising a liquid crystal composition that changes phases and undergoes a
5 visible change when subject to a predetermined voltage output of said battery,

6 one end of said indicator adapted to be electrically connected to the first
7 battery terminal; and
8 a battery switch comprising a resilient, nonconductive, deformable layer on a side
9 of said battery, a switch chamber disposed beneath said resilient layer, and a
10 conductor extending from said switch chamber and connected to the other end
11 of the indicator, a portion of the conductor within said switch chamber
12 comprising a switch contact, said battery switch being biased in an electrically
13 open position,
14 whereby upon pressing of the resilient layer over said switch chamber, the switch
15 contact will be placed in electrical contact with the second battery terminal, thereby
16 placing the indicator in electrical contact across the terminals of the battery to indicate
17 to the user the strength of the battery.

1 ¹⁴ 65. A battery having a battery strength indicator comprising:
2 a nonrechargeable dry cell battery having a first terminal and a second terminal;
3 a battery strength indicator formed in a layer attached to a side of said battery
4 comprising a conductive layer which has a reduced cross-sectional area in
5 contact with a heat sensitive color indicating material adapted to undergo a
6 visible color change when the temperature of the reduced cross-sectional area
7 of the conductive layer rises to a pre-determined temperature in response to a
8 predetermined voltage output of said battery, one end of said indicator adapted
9 to be electrically connected to the first battery terminal; and
10 a battery switch comprising a resilient, nonconductive, deformable layer on a side
11 of said battery, a switch chamber disposed beneath said resilient layer, and a
12 conductor extending from said switch chamber and connected to the other end

13 of the indicator, a portion of the conductor within said switch chamber
14 comprising a switch contact, said battery switch being biased in an electrically
15 open position,
16 whereby upon pressing of the resilient layer over said switch chamber, the switch
17 contact will be placed in electrical contact with the second battery terminal, thereby
18 placing the indicator in electrical contact across the terminals of the battery to indicate
19 to the user the strength of the battery.

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1 66. A battery having a battery strength indicator comprising:
2 a nonrechargeable dry cell battery having a first terminal and a second terminal;
3 a battery strength indicator formed in a layer attached to a side of said battery
4 comprising a light emitting diode that undergoes a visible change when subject
5 to a predetermined voltage output of said battery, one end of said indicator
6 adapted to be electrically connected to the first battery terminal; and
7 a battery switch comprising a resilient, nonconductive, deformable layer on a side
8 of said battery, a switch chamber disposed beneath said resilient layer, and a
9 conductor extending from said switch chamber and connected to the other end
10 of the indicator, a portion of the conductor within said switch chamber
11 comprising a switch contact, said battery switch being biased in an electrically
12 open position,
13 whereby upon pressing of the resilient layer over said switch chamber, the switch
14 contact will be placed in electrical contact with the second battery terminal, thereby
15 placing the indicator in electrical contact across the terminals of the battery to indicate
16 to the user the strength of the battery.

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A battery having a battery strength indicator comprising:

a rechargeable dry cell battery having a first terminal and a second terminal;

a battery strength indicator formed in a layer attached to a side of said battery

which undergoes a visible change when subject to a predetermined voltage

output of said battery, said battery strength indicator having:

A) a dielectric layer;

B) a conductive layer above or below the dielectric layer, one end of said

conductive layer adapted to be electrically connected to the first battery

terminal;

C) a temperature sensitive color indicator material in thermal contact with

the conductive layer, characterized in that:

the conductive layer has

i) sufficient heat generating capacity to effect a change in the temperature
sensitive color indicator material and

ii) means to transfer sufficient heat generated by the conductive layer to the
temperature sensitive color indicator material to change the color
thereof and indicate voltage when the voltage indicator is in contact
with a battery housing; and

a battery switch comprising a resilient, nonconductive, deformable layer on a side

of said battery, a switch chamber disposed beneath said resilient layer, and a

conductor extending from said switch chamber and connected to the other end

of the indicator, a portion of the conductor within said switch chamber

comprising a switch contact, said battery switch being biased in an electrically

open position,

25 whereby upon pressing of the resilient layer over said switch chamber, the switch
26 contact will be placed in electrical contact with the second battery terminal, thereby
27 placing the indicator in electrical contact across the terminals of the battery to indicate
28 to the user the strength of the battery.

1 ¹⁷~~68~~. A battery having a battery strength indicator comprising:
2 a rechargeable dry cell battery having a first terminal and a second terminal;
3 a battery strength indicator formed in a layer attached to a side of said battery
4 comprising a liquid crystal composition that changes phases and undergoes a
5 visible change when subject to a predetermined voltage output of said battery,
6 one end of said indicator adapted to be electrically connected to the first
7 battery terminal; and
8 a battery switch comprising a resilient, nonconductive, deformable layer on a side
9 of said battery, a switch chamber disposed beneath said resilient layer, and a
10 conductor extending from said switch chamber and connected to the other end
11 of the indicator, a portion of the conductor within said switch chamber
12 comprising a switch contact, said battery switch being biased in an electrically
13 open position,
14 whereby upon pressing of the resilient layer over said switch chamber, the switch
15 contact will be placed in electrical contact with the second battery terminal, thereby
16 placing the indicator in electrical contact across the terminals of the battery to indicate
17 to the user the strength of the battery.

1 ¹⁸~~69~~. A battery having a battery strength indicator comprising:

2 a rechargeable dry cell battery having a first terminal and a second terminal;
3 a battery strength indicator formed in a layer attached to a side of said battery
4 comprising a conductive layer which has a reduced cross-sectional area in
5 contact with a heat sensitive color indicating material adapted to undergo a
6 visible color change when the temperature of the reduced cross-sectional area
7 of the conductive layer rises to a pre-determined temperature in response to a
8 predetermined voltage output of said battery, one end of said indicator adapted
9 to be electrically connected to the first battery terminal; and
10 a battery switch comprising a resilient, nonconductive, deformable layer on a side
11 of said battery, a switch chamber disposed beneath said resilient layer, and a
12 conductor extending from said switch chamber and connected to the other end
13 of the indicator, a portion of the conductor within said switch chamber
14 comprising a switch contact, said battery switch being biased in an electrically
15 open position,
16 whereby upon pressing of the resilient layer over said switch chamber, the switch
17 contact will be placed in electrical contact with the second battery terminal, thereby
18 placing the indicator in electrical contact across the terminals of the battery to indicate
19 to the user the strength of the battery.

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20. A battery having a battery strength indicator comprising:
2 a rechargeable dry cell battery having a first terminal and a second terminal;
3 a battery strength indicator formed in a layer attached to a side of said battery
4 comprising a light emitting diode that undergoes a visible change when subject
5 to a predetermined voltage output of said battery, one end of said indicator
6 adapted to be electrically connected to the first battery terminal; and

7 a battery switch comprising a resilient, nonconductive, deformable layer on a side
8 of said battery, a switch chamber disposed beneath said resilient layer, and a
9 conductor extending from said switch chamber and connected to the other end
10 of the indicator, a portion of the conductor within said switch chamber
11 comprising a switch contact, said battery switch being biased in an electrically
12 open position,

13 whereby upon pressing of the resilient layer over said switch chamber, the switch
14 contact will be placed in electrical contact with the second battery terminal, thereby
15 placing the indicator in electrical contact across the terminals of the battery to indicate
16 to the user the strength of the battery.

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1 21. A battery having a battery strength indicator comprising:

2 a dry cell battery having a first terminal and a second terminal;

3 a battery strength indicator formed in a layer attached to a side of said battery
4 which undergoes a visible change when subject to a predetermined voltage
5 output of said battery, the battery strength indicator comprising a conductive
6 layer and a heat sensitive color indicating material adapted to undergo a color
7 change when the temperature of the conductive layer rises to a pre-determined
8 temperature corresponding to the pre-determined voltage output, one end of
9 said indicator adapted to be electrically connected to the first battery terminal;
10 and

11 a battery switch comprising a resilient, nonconductive, deformable layer on a side
12 of said battery, a switch chamber disposed beneath said resilient layer, and a
13 conductor extending from said switch chamber and electrically connected to
14 the other end of the indicator, a portion of the conductor within said switch

15 chamber comprising a switch contact, said battery switch being biased in an
16 electrically open position,
17 whereby upon pressing of the resilient layer over said switch chamber, the switch
18 contact will be placed in electrical contact with the second battery terminal, thereby
19 placing the indicator in electrical contact across the terminals of the battery to indicate
20 to the user the strength of the battery.

1 ²¹~~72~~. The battery of claim ²⁰~~71~~ wherein the battery strength indicator conductive layer
2 includes a reduced cross-sectional area.

b 1 ²²~~73~~. The battery of claim ²¹~~72~~ wherein the dry cell battery is a nonrechargeable dry
2 cell battery.

1 ²³~~74~~. The battery of claim ²¹~~72~~ wherein the dry cell battery is a rechargeable dry cell
2 battery.

1 ²⁴~~75~~. The battery of claim ²⁰~~71~~ further including a non-conductive layer below the
2 battery strength indicator.

1 ²⁵~~76~~. The battery of claim ²⁴~~75~~ wherein the dry cell battery is a nonrechargeable dry
2 cell battery.

1 ²⁶~~77~~. The battery of claim ²⁴~~75~~ wherein the dry cell battery is a rechargeable dry cell
2 battery.